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NOTES FROM PACIFIC COAST OBSERVATORIES

THE SPECTRUM OF NOVA LYRAE 1919

A spectrogram of the nova in *Lyra*, discovered by Miss Mackie from photographs taken at the Harvard College Observatory (H. C. O. Bulletin No. 705) was obtained by Joy on February 5th with the 100-inch telescope. On account of the low altitude of the star the exposure time was limited and the *H* and *K* lines of calcium do not appear on the negative.

The spectrum consists of a considerable number of bright bands superposed on a faint continuous background. The bright hydrogen bands are from 25 to 30 angstroms wide and are double, with a faint broad absorption line near the normal position. On the violet side are two widely separated absorption components of which the more refrangible is the broader. Some of the narrower and fainter bright bands are probably due to enhanced lines of iron and titanium. In the region $\lambda 4570$ to $\lambda 4620$ are a number of diffuse absorption lines which are perhaps due to oxygen and nitrogen lines, as has been suggested in the case of other novae by Baxandall and Stratton. The chief nebular line at $\lambda 5007$ appears faintly on the photograph. The spectrum is in many respects similar to that of *Nova Aquilae* No. 3 about June 18, 1918, nine days after its maximum of light.

The following measures were made on the dark and bright lines and bands.

Hydrogen absorption lines:

Displacement at . . .	H δ	H γ	H β
First component . . .	-13.1A	-14.3A	-16.2A
Second component		-27.5	-30.8

Absorption lines probably due to oxygen and nitrogen:

4573, 4579, 4585, 4592, 4602, 4615, 4622.

Bright bands some of which may be portions of the continuous spectrum:

4103 (H δ), 4340 (H γ), 4416, 4435, 4454, 4471 (He?), 4514, 4534 (Ti?), 4552 (Fe, Ti?), 4655 \pm , 4861 (H β), 4924 (Fe?), 5006 (Ni.)

The widths of some of the bands in angstroms are as follows:

H δ (estimated), 20; H γ , 25; $\lambda 4655$, 57; H β , 29.

The band at $\lambda 4655$ is complex and only the stronger portion is measured.

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A. H. JOY

THE SPECTRUM OF N. G. C. 1499

N. G. C. 1499 ($\alpha = 3^h 54^m$, $\delta = +36^\circ$ for 1860, $\lambda = 129^\circ$, $\beta = -12^\circ$) is a mass of faint nebulosity sprawled over a space of sky two degrees by half a degree. The position angle of the longer diameter is roughly 120° , so the nebula lies approximately parallel to the Milky Way. It borders the southern margin of a dark lane, which, beginning to the northwest of the nebula, winds its way eastward and southward to lose itself in the vast dark clouds of *Auriga*. The position of the nebula is somewhat anomalous, for it lies neither conspicuously in, nor entirely out of the dark region, and a simple inspection affords no convincing proof of a relation with the lane. The brightest portion—that for which the N. G. C. position is given—is, however, clear of the lane and lies on a background of small stars. Photographs¹ have been published on various scales. Several dark markings and a general unevenness of density show on these reproductions, but as a whole the nebula has a curious lack of fine detail for one of this type.

The nebula is too faint to be studied with a slit spectrograph and ordinary exposures. An objective prism and rapid camera, however, show a bright-line spectrum with features of considerable interest. In January and February, 1920, I made four exposures with different combinations as follows:

6° Prism and 10-in. Cooke Lens f/4.5.	5 ^h	exp.	Seed 30.
15° Prism and 10-in. Cooke Lens f/4.5.	4½ ^h	exp.	Seed 30.
30° Prism and 4-in. Lens	f/1.8.	3 ^h	exp. Seed 30.
25° Prism and 4-in. Lens	f/1.8.	3 ^h	exp. Seed 30.

The images were all very faint, in fact it was found convenient to increase the contrast by making second negatives and superposing them. The negatives were studied in the usual manner by “blinking” them against direct photographs and superposing the

¹Among others:

Barnard, *Publications of the Lick Observatory*, Vol. XI, plates 16, 17.
 Roberts, *Celestial Photographs*, Vol. II, plate 22.
 Palissa-Wolf, *Sternkarten*, Blatt 10.
 Barnard discovered the nebula visually in 1885.